

Exhibit

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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable James Donato, Judge

IN RE GOOGLE PLAY STORE)
ANTITRUST LITIGATION) NO. 21-md-02981 JD
_____)

San Francisco, California
Tuesday, July 19, 2022

TRANSCRIPT OF PROCEEDINGS

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Also Present:

Michelle M. Burtis, Ph.D.
Hal J. Singer, Ph.D.
Nathan Hatch

1 And that is the standard methodology that we use, and
2 that's the methodology that I used in the graph that we were
3 just looking at.

4 **THE COURT:** Okay. Let's just pause there.

5 Dr. Singer?

6 **DR. SINGER:** Yes. Thank you.

7 And Dr. Burtis went into a bit of 2(d), which is fine, in
8 that section. And I have some really important points I'd like
9 to make in 2(d). But I think because she came back to 2(a), to
10 attack the logit, I think it makes most sense if we take out
11 2(a) and then, if we could, maybe move to 2(d) --

12 **THE COURT:** Fine.

13 **DR. SINGER:** -- afterwards.

14 Okay. So on the logit model, I just have four points.

15 But before I even start off, I just want to say this.

16 Dr. Burtis cited something I said during my deposition. And
17 you should know, Your Honor, that I tend to do mostly
18 monopolization cases. And just as Dr. Burtis said, when I look
19 at pass-through, as I'm doing right now in the *Pork Antitrust*
20 case, I'm looking at changes in the wholesale prices on changes
21 in the retail price. Right?

22 In this case, by contrast, we have a problem, and that is
23 the take rate on 93 percent of the transactions in the
24 database --

25 Can you put up Slide 4, please?

1 92.4 percent of the transactions in the database were all
2 at that headline 30 percent rate. It is impossible to try to
3 find how app prices vary in response to changes in take rates
4 when the take rates don't change. It's a problem. Right?

5 And even in that very teeny-tiny segment of the pie, the
6 3.1 percent, the 4-point -- where Dr. Burtis goes looking for
7 experiments to exploit, it's all botched. And I'm going to
8 show that to you when we get to 2(d). You can't get any
9 information out of those changes in the small part of the
10 triangle, small part of that figure. Okay?

11 So let me now make my -- what we are trying to do is that,
12 given this limited sample of changes in take rates, I looked
13 for an economic model of consumer demand that would allow me to
14 make predictions of how an app developer would change its price
15 in response to a change in the take rate, given the nature of
16 the demand that that app developer faced. Okay? That's why
17 we're here.

18 Point Number 2, the logit model captures the demand faced
19 by app developers. I couldn't use it if it didn't. Okay? The
20 logit model is a generally accepted methodology based on
21 published literature in the field.

22 Can I see Slide 5, please?

23 I was a little surprised when Dr. Burtis said she had
24 never seen it used. She certainly has read my expert report.
25 Here is a published article, Your Honor, by Werden and Froeb of

1 the Department of Justice in the context of a merger review.
2 And in a merger, the merging parties always like to claim that
3 there are going to be some cost savings that come about from
4 allowing the two firms to merge. And in a typical merger
5 analysis, the economists debate whether the price effect from
6 those cost savings can negate the loss in competition by
7 allowing two rivals to merge. And whoever wins that battle is
8 going to have the net -- whether it's going to be a net price
9 savings for consumers --

10 (Court reporter clarifies.)

11 **DR. SINGER:** So the merger opponents are going to claim
12 that the anticompetitive effects dominate, and the merger
13 proponents are going to argue that the cost savings dominate.
14 But that's the battle.

15 And in those battles, in those merger battles -- which I
16 don't partake in because my practice tends to take me into
17 monopolization, which is why I answered the question as I did
18 in my deposition. In those merger battles, the logit model is
19 commonly used to map a change in the merging parties' costs
20 that come about from merger synergies into a change in price.

21 If you think about it, it's precisely what I'm trying to
22 do here. I need a model that would allow me to map a change in
23 cost that come about from a lower take rate into a change in
24 the app developer's pricing.

25 Now, let me move now to --

1 But what I'm offering is a common methodology that will
2 give you the predicted pass-through rate for all developers.

3 **THE COURT:** Well, just pause for a moment.

4 **DR. SINGER:** Sure.

5 **THE COURT:** Just tell me how that -- what the methodology
6 is that allows you to reliably and accurately predict, just for
7 lack of a better word, that developers' greed is not going to
8 get in the way.

9 In other words, how do you know someone's not going to
10 say, "This is fantastic. Google has gouged me 30 percent. Now
11 they're only gouging me 15. That other 15 is going right in my
12 account"?

13 **DR. SINGER:** I think the question, as I'm internalizing
14 it, is: How do you know that the logit model is reliable to
15 make predictions in the but-for world here? That's how I'm
16 internalizing it. Is that okay?

17 **THE COURT:** That's fine.

18 **DR. SINGER:** All right. And you don't know until you test
19 it. And so the very first thing that I did was I gathered all
20 the data and I ran separate regressions by category.

21 And the logit model makes a very specific prediction about
22 the relationship between an app's share within its category and
23 its price; and, in particular, the prediction is that as the
24 app's price goes up, it should lose share within the category,
25 reflecting the fact that all of these apps within the category

1 are substitutes in some way, in some way.

2 And I estimated this model for every category, and I found
3 a very tight fit. What I mean by that is that the coefficient
4 that related an app developer's price with an app developer's
5 share was negative and statistically significant at the highest
6 levels of statistical significance, the 1 percent level. And
7 the R-squared was over 86 percent. That is, the model -- the
8 logit model was explaining 86 percent of the variation in an
9 app's share within the category.

10 **THE COURT:** But 86 percent is a little low, isn't it?

11 **DR. SINGER:** Now, in terms of R-squared, Your Honor, it's
12 actually pretty high in terms of published work in R-squared.

13 But the real statistic of the two that matters is the
14 p-value on those price parameters. What I found was that for
15 34 of the 35 categories, transportation is an outlier. It was
16 a category that Google actually removed in 2016. But
17 transactions -- a few scant transactions remained, so I left it
18 in as a category.

19 For 34 out of 35, the data obeyed the prediction of the
20 logit model. Right? I couldn't have used the logit model's
21 implied pass-through rate of one minus the developer's share
22 unless I tested and confirmed for myself --

23 **THE COURT:** You think there's a single number that can be
24 used for all of the consumer transactions?

25 **DR. SINGER:** I don't. I don't, Your Honor.

1 demand faced by apps.

2 **MR. RAPHAEL:** Right. And one feature of a logit demand
3 model is that all goods in the market where demand is being
4 measured are substitutes; is that right?

5 **DR. SINGER:** I think that all goods have to be substitutes
6 to some extent. And that could be a very light extent. There
7 could be --

8 **MR. RAPHAEL:** In fact, it's very particular, isn't it,
9 Dr. Singer? In a logit model, all of the goods in the market
10 being studied have to be substitutes in proportion to their
11 shares of that market; isn't that correct?

12 **DR. SINGER:** I think that's fair, yes.

13 **MR. RAPHAEL:** And is it your opinion in this case that all
14 apps in every Google Play category are substitutes in perfect
15 proportion to their share?

16 **DR. SINGER:** Not in perfect proportion. But the P-values
17 on that coefficient that relates price or predicted price -- we
18 use tax rates, Your Honor, to predict a price in Stage I as an
19 instrument -- on the apps share, every one of them with the
20 exception of transportation was statistically significant at
21 the highest levels. That's telling you that the prediction of
22 a logit is true in this case. It didn't have to be true. And
23 had I gotten the wrong sign or insignificant coefficients, I
24 would have gone looking for a different demand system.

25 **MR. RAPHAEL:** Dr. Singer, is it your opinion that every

1 app in each Google Play category is a substitute?

2 **DR. SINGER:** I don't think that every one is a good
3 substitute necessarily. I think Microsoft Excel and Microsoft
4 PowerPoint are in the productivity category. Does that mean
5 the category is defined insanely? No, because Microsoft has a
6 cluster or a package of productivity apps that goes up against
7 Google's package of productively apps.

8 So it doesn't surprise me that you can find some silly
9 examples -- Thomas the Train and Doom -- you can find some
10 silly examples that probably aren't close. But if you're right
11 and that's what generally characterizes the data, that is, if
12 Google just willy-nilly slapped these categories together and
13 you just have a random collection of apps, then when I go to
14 estimate the logit model, Your Honor, the fit, the goodness of
15 fit would be zero. The P-values -- right? -- wouldn't be as
16 good as they are. They wouldn't be statistically significant.

17 That's confirmation that the categories, as designed by
18 Google in the ordinary course of business, which is also very
19 similar to what Apple's categories looked like, are meaningful.
20 They are a meaningful arena of competition around which one can
21 use for estimating shares for the logit model.

22 **MR. RAPHAEL:** But they're not substitutes, are they?

23 **THE COURT:** I don't have a problem with that. I think
24 that's fine.

25 Okay. One or two more questions, Mr. Raphael.